



# PUMA AW560/660

# PUMA VAW 700/800

Aluminum Wheel Turns



# 2-axis aluminum wheel turning

Superb customized horizontal aluminum wheel turning centers are designed for high precision and faster machining across a broad range of aluminum wheels and to meet demanding specs for higher productivity.

## PUMA AW560/660



# 4-axis aluminum wheel turning

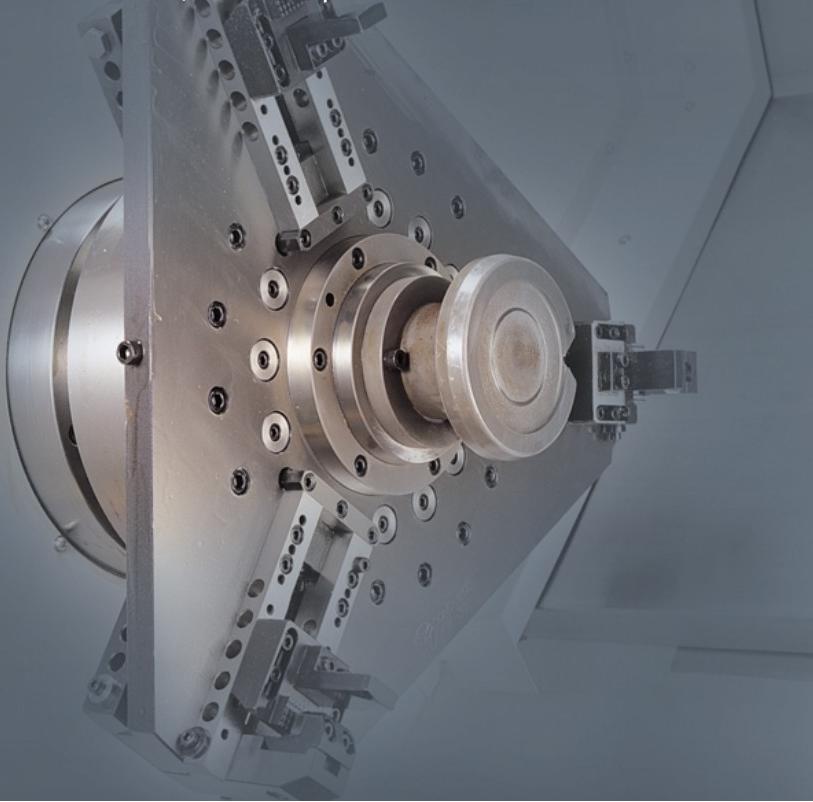
Specialized aluminum wheel turning centers,  
PUMA VAW series redouble the machining productivity  
with its twin turrets, robust and systemized design construction.

## PUMA VAW700/800



# PUMA AW Series Main Spindle

PUMA AW560/660 Main Spindle



## AL. Wheel Turning Capacity



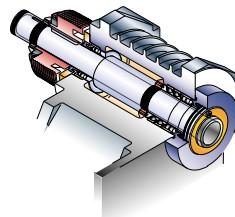
PUMA AW560 X-axis travel  
**20 (24 )<sup>\*2</sup> 362 mm**

PUMA AW660 Z-axis travel  
**24 (26 )<sup>\*2</sup> 720 mm**

Max. spindle speed  
**3000 (2000) r/min**

Motor(30 min)  
**37 kW**

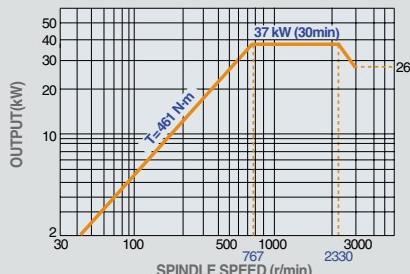
<sup>\*1</sup>: PUMA AW660 & PUMA AW560 opt.



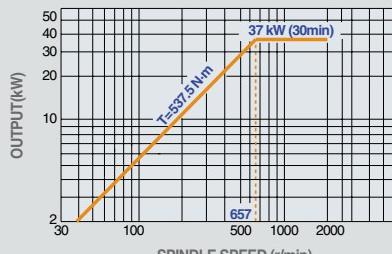
The powerful high-torque spindle motor provides power for heavy stock removal, greatly reducing the number of roughing passes required.

### Main Spindle Power-torque diagram

PUMA AW560 (Max. 3000 r/min)

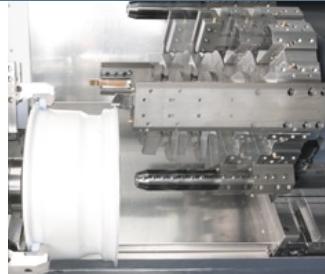


PUMA AW660 (Max. 2000 r/min)



<sup>\*2</sup>: The detail specifications should be reviewed before contract.

## Rapid Traverse

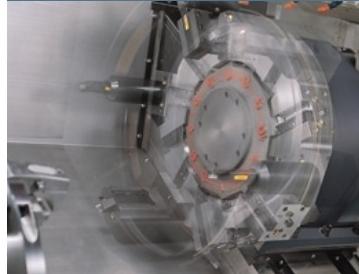


X-axis travel  
**16 m/min**

Z-axis travel  
**20 m/min**

- Perfect realization of servo driven feed system

## Turret



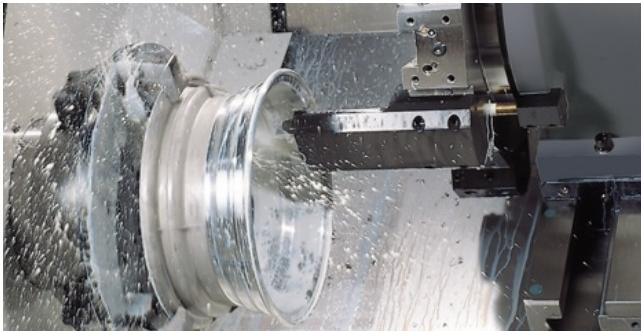
No. of tool station  
**12 station**

Index time  
(1-station swiveled)  
**0.25 s**

Fast indexing turret (indexing time:0.25second) designed for high productivity and take on all kinds of Aluminum Wheels.

# Suitable For Al. Wheel Machining

## High speed & high accuracy cutting



Doosan Al. wheel turn series finish aluminum wheels with improved efficiency, which is guaranteed by up 3000 r/min spindle speed and 0.002mm repeatability.

## Shower coolant system (Opt.)



The large volume of pressure coolant system is effectively to remove heat from the aluminum wheel and tool to assure consistent high precision.

## Easy chip removal



Mass of chips falls directly onto single-sheet saddle cover below for much more effective handling.

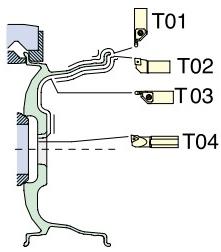
## Coolant system



Large-capacity chip flushing coolant system

## Machining Example

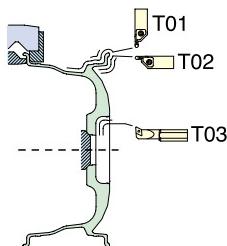
### 1st Operation



### Operating Specifications

Tool No.	Tools		Cutting conditions			
	Shape	Holders (Inserts)	N(r/min)	V(m/min)	T(mm)	F(min/rev)
T01		RF151. 42-2525-60 (N151. 4-800-60-AL)	2200	2620-2618	3	0.3
T02		PCLNR 2525 M12 (CNMG 120412/kW10)	2200	2608-2042	3	0.3
T03		RF151. 42-2525-60 (N151. 4-800-60-AL)	2200	2042-440	3	0.27
T04		S25T-STFCR/16 (TCGX 16T308-AL)	2200	440-408	3	0.3

### 2nd Operation

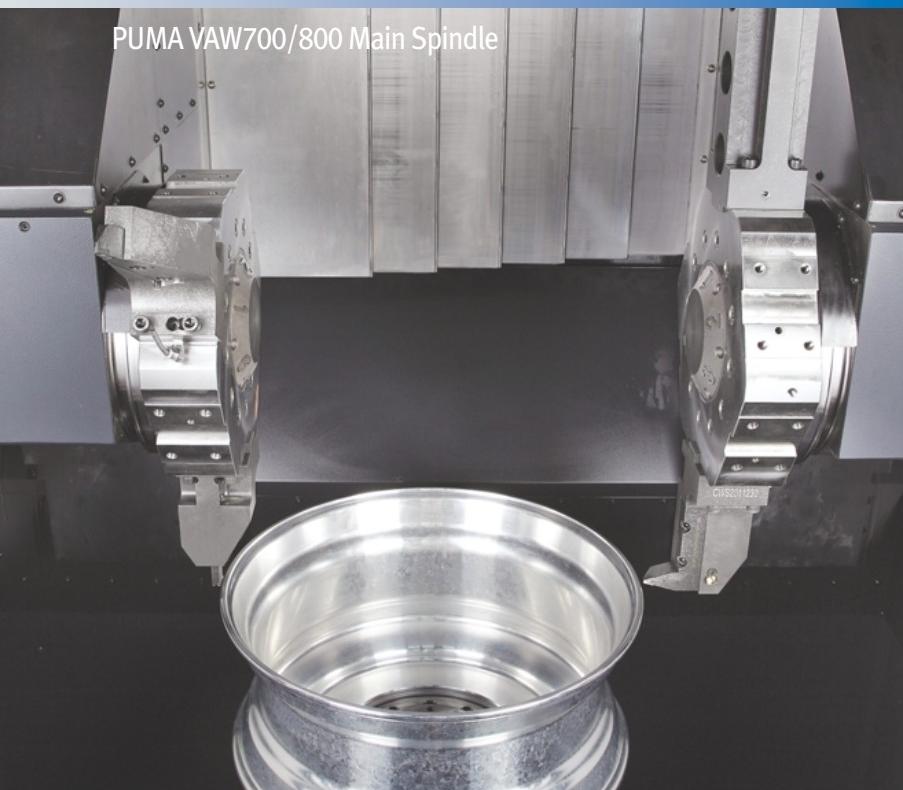


### Operating Specifications

Tool No.	Tools		Cutting conditions			
	Shape	Holders (Inserts)	N (r/min)	V (m/min)	T (mm)	F (min/rev)
T01		RF151. 42-2525-60 (N151. 4-800-60-AL)	2200	2620-2618	3	0.3
T02		RF151. 42-2525-60 (N151. 4-800-60-AL)	2200	2608-2262	3	0.15
T03		S25T-SDUCR 11-M (DCGX-11T308-AL)	2200	943-408	3	0.3

## PUMA VAW Series Main Spindle

PUMA VAW700/800 Main Spindle



Max. spindle speed

**2000 r/min**

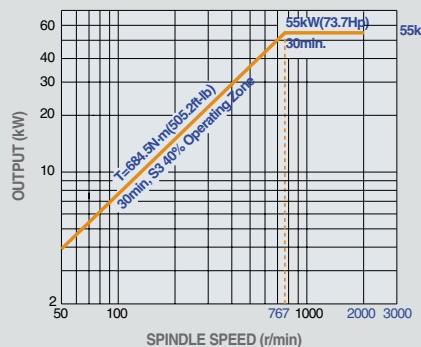
Motor (30 min)

**55 kW (opt : 75 kW)**

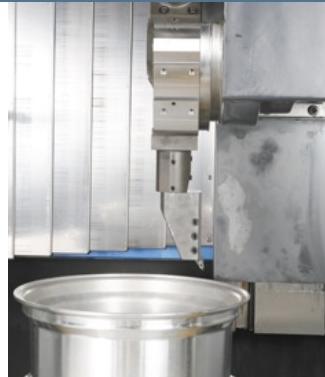
The high-torque spindle motor provides power for heavy stock removal, greatly reducing the number of roughing passes required.

Main Spindle Power-torque diagram

PUMA VAW700/800 (Max. 3000 r/min)



## AL. Wheel Turning Capacity



PUMA VAW700

**26.5 (without ACC)**

X-axis travel

Left **570 mm**

Right **570 mm**

PUMA VAW800

**28 (without ACC)**

Z-axis travel

Left **550 (650)<sup>\*1</sup> mm**

Right **550 (650) mm**

\*1: on VAW800

## Rapid Traverse



X-axis travel

**16 m/min**

Z-axis travel

**16 m/min**

## Turret



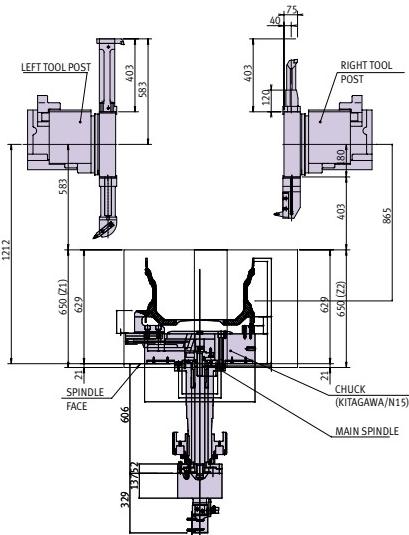
No. of tool station

**6+6 station**

Index time  
(1-station swiveled)

**0.15 s**

## High Productivity Dual Turret



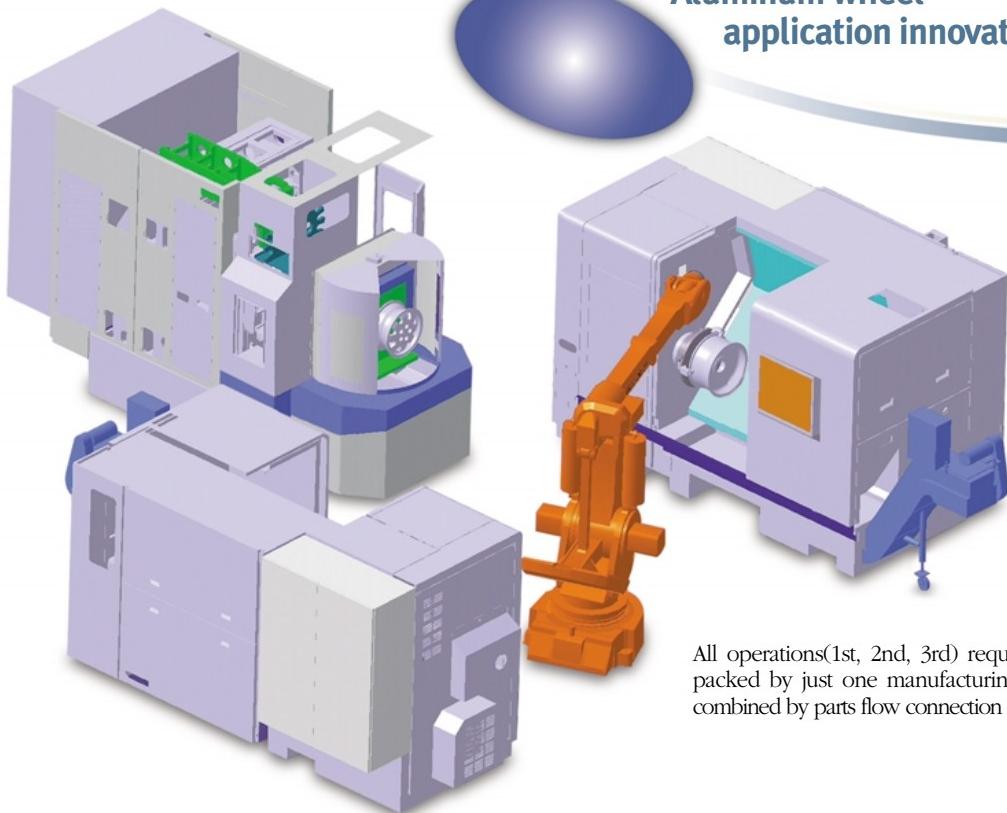
## Operator's Panel



The operator panel is mounted on an adjustable pendant for easy viewing and accessibility during set-up and operation. The layout and location of the panel is ergonomically designed to maximize the efficiency of use and operator's convenience. Comprehensive alarm diagnostics are provided for the machine, control and programming errors.

## AL. Wheel System Application

Doosan Infracore cell manufacturing system for aluminum wheel with a wide variety of systems containing a broad range of flexibility and automation.

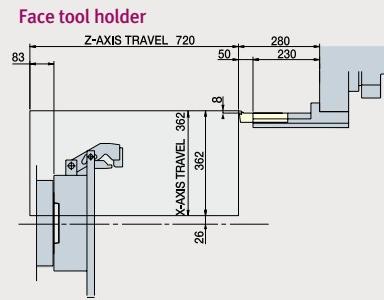
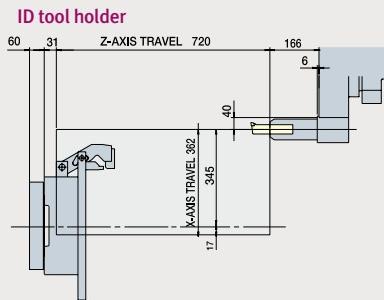
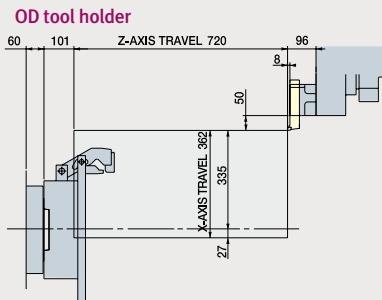


All operations(1st, 2nd, 3rd) required to finish wheel are packed by just one manufacturing cell. Each cell can be combined by parts flow connection equipment to form FMS.

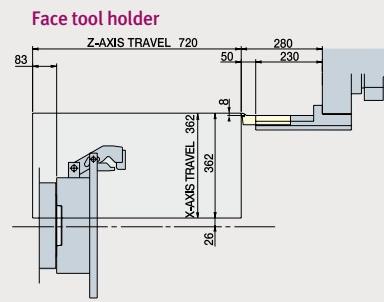
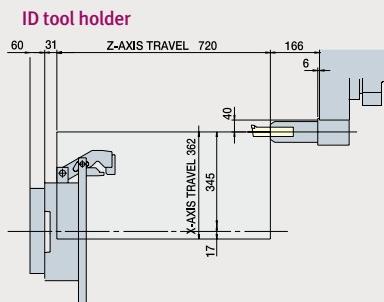
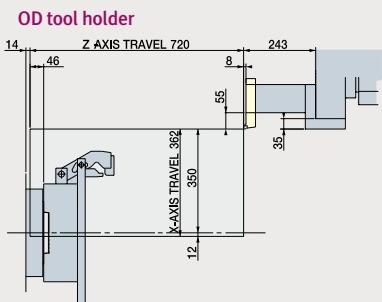
# Working Ranges

## PUMA AW560

unit : mm



## PUMA AW660

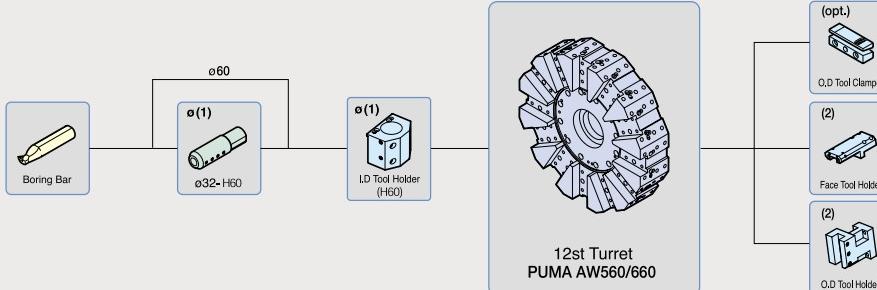


Note) Detail information of VAW700/800 does not included in the catalogue.  
If the detail information related VAW700/800 needed, please contact your countpartner before contract.

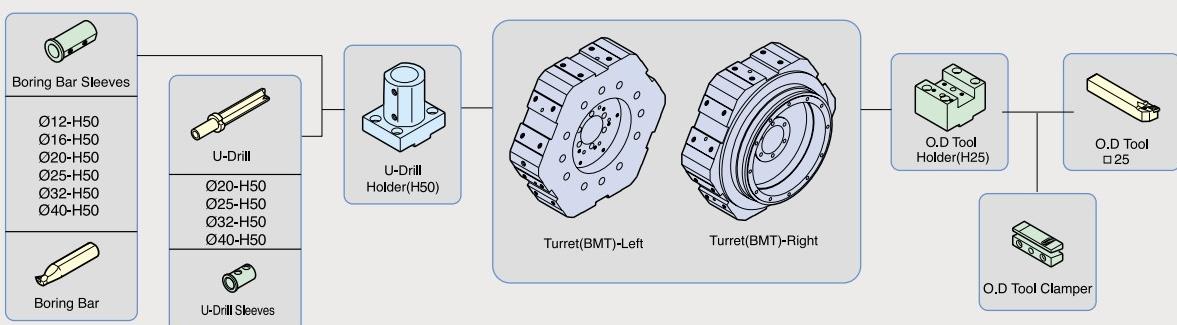
# Tooling System

unit : mm

## PUMA AW560/660



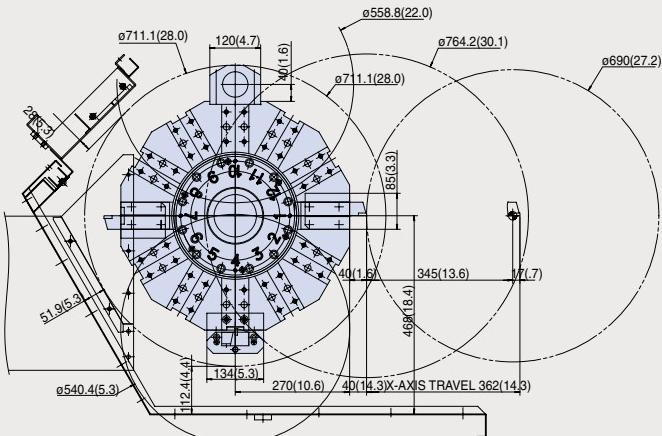
## PUMA VAW 700/800



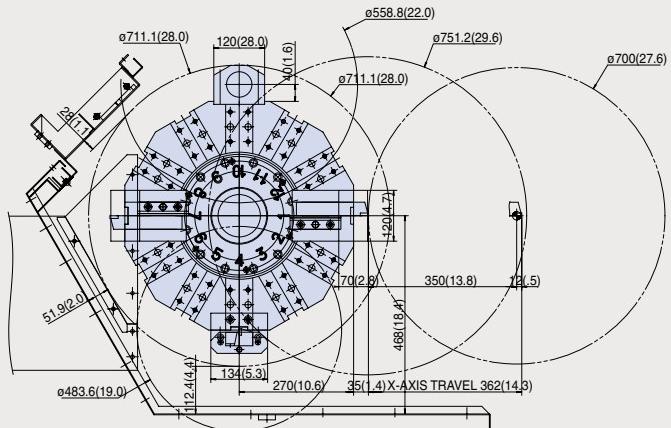
# Tool Interference Diagram

unit : mm

## PUMA AW560



## PUMA AW660

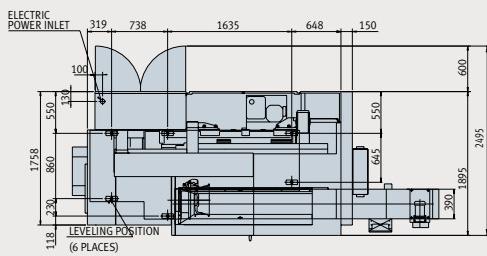


## External Dimension

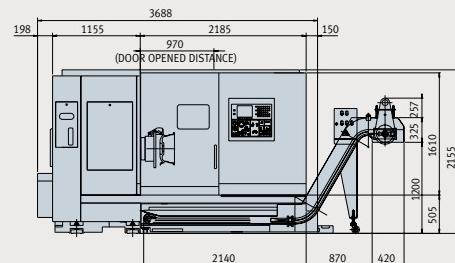
unit : mm

# PUMA AW560/660

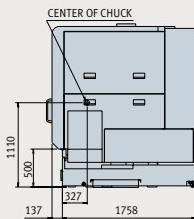
## Top View



### front View

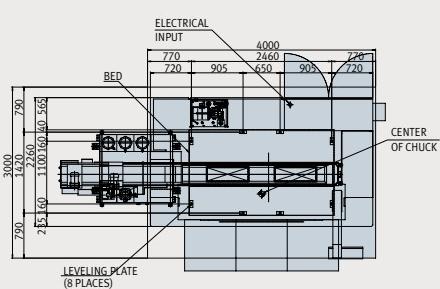


## Side View

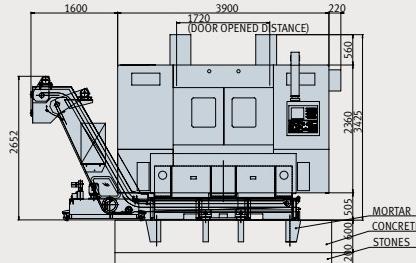


## PUMA VAW 700

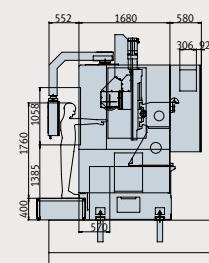
## Top View



### front View

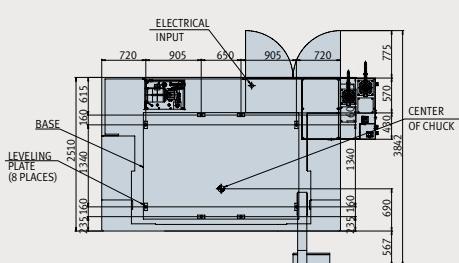


## Side View

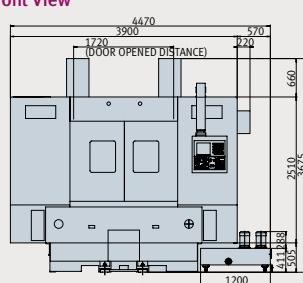


## PUMA VAW 800

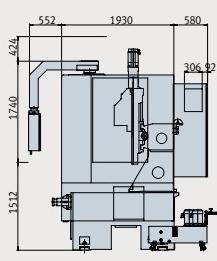
## Top View



### front View



## Side View



# Machine Specifications

Item	PUMA AW560	PUMA AW560MF*	PUMA AW660	PUMA VAW700	PUMA VAW800
<b>Capacity</b>	Swing over bed mm	830		900	1140
	Swing over saddle mm	600		730	970
	Max. turning diameter mm	550	650	673	711
	Max. turning length mm	710		330	440
	Recom. wheel size inch	20 {24 }	20	24 {26 }	26.5
<b>Carriage</b>	Travel distance X-axis mm	362		570	
	Z-axis mm	720		550	650
<b>Main Spindle</b>	Spindle speed r/min	3000	2500	2000	2000
	Spindle nose ASA	A2 #8		A2 #11	
	Spindle bearing diameter (Front) mm	160	130	180	150 {180}
<b>Tool Post</b>	No. of tool station	12st		6st + 6st	
	OD tool height mm	32 x 32		25 x 25	
	Boring bar diameter mm	ø60		ø50	
	Indexing time (1st swivel) s	0.25		0.15	
<b>Feedrate</b>	Rapid traverse X-axis m/min		16		
	Z-axis m/min	20		16	
	Max. cutting feedrate X-axis mm/rev		500		
	Z-axis mm/rev		500		
<b>ACC</b>	Automatic chuck changer (A.C.C)	-		N/A	
<b>Motors</b>	Main spindle motor kW	30/37	25/30	30/37	45/55
	Servo motor X-axis kW			4.0	
	Z-axis kW		7.0		4.0
<b>Power Source</b>	Coolant pump kW			1.5	
	Electric power supply (Rated capacity) kVA		53.1		88.2
<b>Machine Size</b>	Machine height mm	2155		3425	3675
	Machine Demension length mm	3688		4470	
	width mm	2495		3602	3842
	Machine weight kg	7750	8000	13000	13500
<b>NC System</b>		Doosan Fanuc i series		Fanuc 31i-A	

Note : { } are optional. \* : Mirror Finished

## Standard Feature

Air blower* <sup>1</sup>	Full enclosure chip and coolant shield	Linear position transducer for chuck clamp detection at loading station* <sup>2</sup>
Air gun* <sup>1</sup>	Hand tool kit, including small hand tool for operations	Lubrication equipment
Automatic door* <sup>1</sup>	Hydraulic actuating cylinder	Safety precaution name plates
Coolant supply equipment	Hydraulic power unit for operations	Standard tooling kit
Electric power transformer	Instruction manuals & parts book	(tool holders & boring sleeve)
Foot switch-chuck	Levelling jack screw & plates	Work light
Front door interlock		* <sup>1</sup> : VAW700/800

## Optional Feature

Additional tool holders & sleeves	Chip bucket	Safety edge sensor for auto-door
Air blast for chuck jaw or work cleaning	Chip conveyor	Semi-dry coolant
Air conditioner for electric power cabinet	Linear scale for left & right X-axis* <sup>1</sup>	Signal tower (yellow, red, green)
Air finger chucks	Oil mist collector	Special chucks and cylinders
Air gun	Oil skimmer	
Automatic front door with safety device	Pressure switch for chucking pressure check	
Automatic loading & unloading equipment		- in alphabetic order

• Design and specifications are subject to change without prior notice.

\*<sup>1</sup> : VAW700/800

• Doosan is not responsible for difference between the information in the catalogue and the actual machine.

# NC Specifications

	Item	Spec.	DOOSAN Fanuc i series	Fanuc 31i-A
<b>Controls</b>	Controlled axes		X, Z	X1, Z1, X2, Z2
	Simultaneously controlled axes	Std. 2 axes	2 axes	4axes
<b>Axis Functions</b>	Backlash compensation	0~ ± 9999 pulses		
	Follow-up / Chamfering on/off			
	HRV2 control			
	Increment system 1/10	0.0001mm / 0.00001		Opt.
<b>Operation</b>	Least input increment	0.001mm / 0.0001		
	Stored stroke check1	Overtravel control		
	Automatic operation(memory) / Buffer register			
	Handle incremental feed	X1, X10, X100		
<b>Interpolation</b>	Search function	Sequence NO. / Program NO.		
	1st, 2nd reference position check / return	G27 / G28, - / G30		
	Circular interpolation	G02		
	Continuous thread cutting			
<b>Feed Functions</b>	Dwell	G04		
	Linear interpolation	G01		
	Multiple threading / Thread cutting retract			
	Thread cutting / Synchronous cutting			
<b>Auxiliary &amp; Spindle Functions</b>	Feed per minute / Feed per revolution			
	Feedrate override	0 - 200 % (10% unit)		
	Jog feed override	0 - 2000 mm/min		
	Rapid traverse override	F0/ 25 / 100 %		
<b>Programming Functions</b>	Spindle orientation			
	Constant surface speed control			
	M-function	M3 digit		
	S-function	S4/S5 digits		
<b>Tool Functions</b>	Spindle speed override	0~150 %		
	Absolute / Incremental programming			
	Canned cycle for drilling / Turning			
	Custom macro			
<b>Editing Op. Functions</b>	Decimal point programming / pocket calculator type decimal point programming			
	Direct drawing dimension programming			
	Maximum program dimension	± 9 digits		
	Multi repetitive canned cycle	G70~G76		
<b>Setting &amp; Display</b>	Multi repetitive canned cycle 2			
	Optional block skip	Total 9		
	Program number / Sequence number	O4 digits / N8 digits		
	Programmable data input	G10		
<b>Data Input &amp; Output</b>	Sub program call		4	10
	Tape format for FANUC series 10/11			-
	Tape format for FANUC series 15		-	
	Work coordinate system selection	G52~G59		
<b>Other Functions</b>	Auto tool offset			
	Tool monitoring system		Opt.	Opt.
	Direct input of tool offset value measured B			
	Tool geometry / wear compensation	Geometry & wear data		
<b>Tool Functions</b>	Tool life management			
	Tool nose radius compensation			
	T-code function	T2+2 digits		
	Tool offset pairs		64 pairs	64 pairs
<b>Editing Op. Functions</b>	Tool offset value counter input		-	
	Background editing			
	Expanded part program editing	Copy, Move, Change of NC program		
	No. of Registered programs		400 ea	500 ea
<b>Setting &amp; Display</b>	Part program editing / Program protect			
	Part program storage size*1		1280 m	640 m
	Display of spindle speed and T-code at all screen			
	Help function	Alarm&Operation display		
<b>Data Input &amp; Output</b>	Self diagnostic function			
	Servo setting screen / Spindle setting screen			
	Tool path graphic display			
	I/O interface	RS-232C		
<b>Other Functions</b>	Memory card input and output			
	Reader puncher control	CH1 interface		
	Ethernet function	Embedded ethernet function		
	MDI / Display unit		10.4 Color TFT LCD	10.4 Color TFT LCD
	PMC system			

\*1 : Standard Part program length is different on export condition. On the addition of optional functions, its length can be reduced.

Fanuc 31i-A : PUMA VAW700/800

# PUMA AW / VAW



<http://www.doosaninfracore.com/machinetools>

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